

change before 1941, but will continue as they were from 1901 to 1910. Both these assumptions are implicit in the statement that method A "assumes the same percentage decrease in each quinquennial group during ten years as was experienced in the decade 1901-1911."

Method B assumes (a) that there will be no emigration whatever from Great Britain after 1921, and (b) that until 1941 the age specific death rates will be precisely what they were in the period 1910 to 1912. Method B consists in "applying the death-rates of 1910 to 1912 to the population of 1921, year by year of age." This method gives larger estimated populations than Method A, chiefly because of the assumed absence of emigration.

It will be noted that in both methods A and B, Professor Bowley chooses to base his forecasts of the trend of future population growth not upon the whole known history of the movement of population in Great Britain in the past, but rather upon what happened in two short periods (one of ten years the other of three years) in the recent past. This may be sound methodology in predicting population growth. It has not been found to be so in general in other branches of science. Predicting future population is, and no matter how cleverly camouflaged can be, nothing but extrapolation along some kind of a curve beyond the range of known facts. Professor Bowley prefers (for reasons not stated) to extrapolate 20 years on the basis in one case of ten and the other of three years experience, rather than to consider the 120 years of experience available.

The results of applying these two methods are summarised as follows:

"At most there will be 180,000 additional applicants for work (male and female) annually from 1921 to 1931, unless the age of retirement is raised, or the relative number of women occupied is increased, and this is at present being reduced to about 120,000 by emigration. From 1931 to 1941 the most to be expected is 47,000, which will also be reduced by emigration. So far from there being an excessive working population, the annual rate of growth after 1931 will be only 0.2 per cent."

These estimates may be right. By restricting the discussion to persons who will in 1931 or 1941 be over 10 or 20 years of age Professor Bowley avoids the necessity of any consideration of the future course of the birth-rate, because plainly all the persons who will be 10 years old or more in 1931, or 20 years old or more in 1941, are now already living somewhere. The only basis, therefore, for considering his estimates too low, must arise from disagreement with his assumption about mortality. Public health workers would be loath to admit, I think, that there will be no reduction in mortality, even in ages beyond 15, as between 1906 and 1941, or 1911 and 1941. As a matter of fact we know there has already been some reduction and have no good reason, I believe, to assume that there will not be more. RAYMOND PEARL.

Brigham, Carl C., Ph.D., Assistant Professor of Psychology in Princeton University. *A Study of American Intelligence.* Oxford University Press, 1923. Pp. 210.

THE author of this book was concerned in applying psychological tests.

to recruits for the American army in the war, and the results of those tests are the material on which this study is based. He begins by a very lucid exposition of the tests employed, in particular the well-known pair, Alpha for English-speaking literates, and Beta for non-English-speakers and illiterates; individual examinations were given, as far as possible, to those whose scores in Beta, or Beta following Alpha, were very low. From the various data a combined scale was formed; an experimental group of 1047 men who took all the types of test was employed for this purpose.

The main concern of this book is not with the intelligence of the ordinary American citizen, but with that of foreign-born residents in America, in other words, immigrants. It is proved beyond all doubt that success in the tests increased with the number of years spent in America. When the total 'foreign-born white draft' of about 12,000 is divided into five-year residence groups according to the length of stay in America, there is a steady rise in the apparent intelligence of each group, from those who have resided less than five years, to those who have resided over 20 years. Those in the last group are up to the average intelligence of the native born white draft, whereas the first group has an average much closer to the negro than to the native white. A patriotic American would no doubt like to believe that American air or food or environment stimulates the intelligence; but Dr. Brigham rightly will not allow this explanation. Nor can a growing knowledge of English account for the greater success (so Dr. Brigham argues) since all who may have failed in Alpha for lack of English were tested with Beta, which does not involve the use of English, and were placed on the 'combined scale' by their Beta results alone. We have to fall back therefore on the belief that each successive period of five years has seen a less intelligent group of immigrants entering America. And to account for this we find that there has been a marked racial change in immigrants during the period in question. Between 1887 and 1897 England was still contributing a fairly large proportion of the total. Germany was actually the largest contributor. Ten years later both English and German immigrants have greatly diminished; Austria sends the largest contingent, with Italy second and Russia third. Ten years later again the same three countries are still leading, but this time the Italian and Russian contingents are each equal to the Austrian; and again the English and German contingents have shrunk. Compare this with the achievements in the tests of the different races (table on p. 119), where out of sixteen nationalities the English are very easily first, Germans fourth, Austrians tenth, Russians fourteenth and Italians fifteenth. Incidentally the very poor achievement of Italians has been used by some critics to cast doubt upon the whole thesis of this book; and it is *prima facie* astonishing to find that the countrymen of Leonardo da Vinci only just surpass the negro in average intelligence. Dr. Brigham then attempts to apportion the emigrants from the various countries into three main racial groups, Nordic, Alpine and Mediterranean. He finds that in intelligence the Nordic group is considerably above the other two, while the Alpine is slightly above the Mediterranean. He also finds that in the last twenty-five years the proportion of Nordic immigrants has dropped from 30% to 23%, the

Alpine percentage has remained stationary at 44, and the Mediterranean has increased very slightly. His conclusion is that if immigration of Alpine and Mediterranean stocks continues in this proportion, the immigrants will tend to bring the average American intelligence down towards their own lower level.

The conclusions of this book are already so well known and so widely accepted that it is well to point out the need of caution in one or two places. First, there is not enough evidence in this book to prove that those who took test Beta (i.e., all who did not speak English, the great majority of recent immigrants) were not at a disadvantage compared with those who took test Alpha. It is true that Beta is supposed to dispense with the need for English; but we read that orderlies went about the room where the test was being done, and said amongst other things: 'Sure,' 'Same,' 'Fix it!' Without supposing a growth of intelligence with length of stay in America, one may easily believe that, the longer a man has lived there, the more readily will he respond to the command 'Fix it!' In fact one cannot but believe this. And in so far as acclimatization to American methods is a factor in success in the test, the test fails as a measure of pure intelligence. Secondly, there is a certain indirectness of approach to the problem. A particular 'residence group' does badly in the tests; and the same 'residence group' contains a larger proportion of, say, Italians, than another older and more successful group. But that is only indirect evidence as to the intelligence of Italians, and is not a proof of anything at all. We should eliminate the complicating factor of 'duration of stay in America' and obtain clearer knowledge of racial differences in intelligence, if a thorough testing of all immigrants, preferably by examiners of their own nationality, were added to the other horrors of Ellis Island.

However, even if it cannot be regarded as finally proving its thesis, this book is interesting, well written, and amply provided with explanatory tables and diagrams. The author attacks the term 'Mental Age' as used in the measurement of intelligence, denouncing it as bad scientific slang. Where adults are concerned it is doubtless better to substitute percentile rank; but with school-children the conception of mental age is legitimate and useful.

J. F. DUFF.

Kammerer, Paul. *Rejuvenation and the Prolongation of Human Efficiency.* Methuen & Co., Ltd., London. Pp. 252. Price 8s. 6d. nett.

Voronoff, Serge. *Rejuvenation by Grafting.* George Allen and Unwin, Ltd. Pp. 224. Price 15s. nett.

Haire, Norman. *Rejuvenation, the Work of Steinach, Voronoff and others.* George Allen and Unwin, Ltd. Pp. 223. Price 7s. 6d. nett.

THESE three books form a very good introduction to the subject of rejuvenation in man.

Rejuvenation can be brought about in two different ways: firstly, by the ligaturing or cutting of the vas deferens: (the duct that carries the seminal fluid from the testis to the exterior) and, secondly, by grafting reproductive tissue into the body.